

SEL-8UCIP1-EOS; SEL-4UCIP1-EOS

Selenio™ Multichannel Uncompressed Over IP Module



Combining baseband video and audio processing, compression and IP networking features in a single, space-saving modular platform, the Selenio MCP3 now offers best-in-class uncompressed-over-IP functionality.

This multichannel uncompressed-over-IP module provides uncompressed signal transmission at high bitrates and quality for superior editable video, and is especially well-suited to low-latency broadcast contribution applications such as sports, live events and studio-to-studio production. Supporting real-time transport of *3G/HD/SD and IP, this card enables high-density, multichannel uncompressed over IP in a single-slot solution that provides up to 112 UCIP channels in the Selenio MCP3 platform.

Benefits

- Supports real-time transport of 3G/HD/SD and IP, enabling high-density, multichannel uncompressed-over-IP functionality in a single-slot of the Selenio MCP (3G video is supported in AES67 mode, in Release 2.0)
- Delivers an on-ramp/off-ramp solution for conversion of SDI baseband signals to IP streams and IP to SDI signals
- Allows continued use of existing infrastructure for a phased, disruption-free transition to IP, while supporting hybrid domains
- Ensures seamless transitions between the IP and SDI domains, providing an independent frame sync for each IP video source to lock all SDI outputs to the frame reference
- Provides clean/quiet switching between input IP sources, eliminating glitches
- Operates seamlessly with Imagine Communications' **Platinum™ routers** and **Magellan™ SDN Orchestrator** software control system, providing a truly complete solution for the transition from SDI to IP

Features

- Supports bidirectional, multichannel transport of HD/SD-SDI video signals over 10GigE link on a single slot module in Selenio MCP platform (3G video is supported in AES67 mode, in Release 2.0)
- Supports SMPTE 2022-5 Forward Error Correction for protection against packet losses created by occasional network errors (when operating in Classic UCIP mode)
- Supports SMPTE 2022-6 RTP transport over 10 GigE IP links
- Supports SMPTE 2022-7 seamless protection specification
- Supports AES67 audio over IP
- Supports Precision Time Protocol (PTP) (SMPTE 2059)
- Eight configurable input/output HD-BNC connectors
- Transmits (SDI → IP) up to four streams simultaneously and Receives (IP → SDI) up to four streams simultaneously within the limits of available I/O connectors and bandwidth on the Ethernet link

- Capable of up to six receives and two transmit configurations on SEL-8UCIP (when operating in Classic UCIP mode)
- Frame syncing of the output SDI signals (Receive side), including audio sample rate conversion to the frame reference
- Supports thumbnail monitoring of video input or output ports
- Supports clean switching between input video on IP sources. Pass-through of all SDI audio
- Supports additional Selenio SDI input/output via the frame's internal video cross-point
- Dual-network interfaces supporting 10GbE SFP+
- Auto-detect, status and monitoring of the SDI input standard
- Supports Unicast and Multicast transmission
- Supports up to 8 VLANs in total on module external interfaces
- Synchronizes up to eight stereo pairs of input audio per video stream
- Supports different modes of frame synchronization to the frame reference
- Sample-rate conversion to maintain sync on PCM signals
- Supports RP168-2009 standard switching between two SDI sources for the downstream devices for seamless change
- Software key-upgradeable between the different channel options
- VANC data drop/repeat with video sync events
- Supports Service Manager, Reservation-Based Scheduling and Management application
- Supports Selenio standard software upgrade method
- Supports full redundancy schemes provided in Selenio platform, N+M, N+1, 1+1 and more
- SDI Loopback support, route any of the SEL-UCIP1 SDI inputs to any of the SDI outputs in the same module, this routing includes video and audio frame synchronization of the looped-back SDI input

Details

The Selenio UCIP module is a multichannel encapsulate/de-capsulate over IP solution, offering real-time, high-quality transport of uncompressed-over IP-signals. It is available in multiple channel combinations for *3G/HD/SD-SDI signal support, as well as up to 8x independent unidirectional SDI channels in multiple combinations for Transmit (SDI → IP) or Receive (IP → SDI) modes, on a single module.

An ideal solution for video contribution applications over IP networks, the module harnesses the power of the Selenio media convergence platform, which offers higher density, enhanced redundancy schemes, an easy-to-use interface and low total cost of ownership. The platform's flexible, expandable design enables customers to mix and match UCIP, JPEG-2000 and H.264/MPEG-2 functionality, as well as other Selenio processing capabilities, in the same frame for a future-proof solution.

* 3G-SDI is supported in Rel. 2.0

Specifications

Specifications and designs are subject to change without notice.

HD/SD-SDI INPUT	
Number of Inputs	Up to 6 (bi-directional port shared with output)
Standard	HD: SMPTE 292M (1.485, 1.485/1.001 Gb/s) SD: SMPTE 259M-C (270 Mb/s, 525/625 component video) 3G (AES67 mode only): SMPTE 424M (1080p50/59/60)
Connector	(High-Density) HD-BNC
Impedance	75 ohms
Signal Level	800 mV ± 10%
Return Loss	HD: >15 dB, typical, from 5 MHz to 1485 MHz SD: >15 dB, typical, from 5 MHz to 270 MHz 3G (AES67 mode only): >18 dB, typical, to 1.5 GHz and > 10dB to 3 GHz
Equalization	HD: Adaptive cable equalization for >492ft (150 m) typical, of Belden 1694A coaxial cable SD: Adaptive cable equalization for >820 ft (250 m) typical, of Belden 1694A coaxial cable 3G (AES67 mode only): Adaptive cable equalization for >328ft (100m) typical, of Belden 1694A coaxial cable
Note: All the unused output ports should be have 75Ω terminators.	

HD/SD-SDI OUTPUT VIDEO

Number of Outputs	Up to 4 (bi-directional port shared with input)
Standard	HD: SMPTE 292M (1.485, 1.485/1.001 Gb/s) SD: SMPTE 259M-C (270 Mb/s, 525/625 component video) 3G (AES67 mode only): SMPTE 424M (1080p50/59/60)
Connector	(High-Density) HD-BNC
Impedance	75 ohms
Return Loss	HD: >15 dB, typical, from 5 MHz to 1485 MHz SD: >15 dB, typical, from 5 MHz to 270 MHz 3G (AES67 mode only): >18 dB, typical, to 1.5 GHz and > 10dB to 3 GHz
Signal Level	800 mV ± 10%
DC Offset	0.0V ± 0.5 V
Rise and Fall Time	HD: <270 ps (20% to 80%) SD: 400 - 1500 ps (20% to 80%) 3G (AES67 mode only): <135 ps (20% to 80%)
Overshoot	<10% of amplitude (all outputs terminated)
Jitter	Timing jitter: HD: <1 UI pk-pk SD: <0.2 UI pk-pk 3G (AES67 mode only): <2 UI pk-pk Alignment jitter: HD: <0.2 UI pk-pk SD: <0.2 UI pk-pk 3G (AES67 mode only): <0.3 UI pk-pk

OP+SFP+TRSM+10G SINGLE MODE OPTICAL TRANSCEIVER

Transmitter					
Parameter	Minimum	Typical	Maximum	Unit	Notes
Laser OMA Output Power	-5.2			dBm	1
Laser Mean Output Power	-8.2		+0.5	dBm	1
Laser Off Power			-30	dBm	1
Extinction Ratio	3.5			dB	1
Transmitter and Dispersion Penalty (TDP)			3.2	dB	1
Center Wavelength	1260		1355	nm	1
Optical Return Loss Tolerance			12	dB	1

RECEIVER

Parameter	Minimum	Typical	Maximum	Unit	Notes
Receiver Sensitivity (OMA)			-12.6	dBm	1
Stressed Receiver Sensitivity (OMA)			-10.3	dBm	1,2
Receiver Power Overload			+0.5	dBm	1
Receiver Reflectance			-12	dB	1
Center Wavelength	1260		1355	nm	1
Vertical Eye Closure Penalty	2.2			dB	3
Stressed Eye Jitter	0.3			UIp-p	3
RX_LOS (OMA) Assert			-17	dBm	4
RX_LOS (OMA) De-Assert	-30			dBm	4
RX_LOS (OMA) Hysteresis	0.5			dB	4

1. IEEE 802.3ae Clause 52 compliant
2. Measured with worst ER; BER<10⁻¹²; 231-1 PRBS
3. Vertical eye closure and stressed eye jitter are test conditions for stressed sensitivity (OMA) measurement.
4. Loss of Signal (LOS) detection responds only to OMA and the indicator will respond unpredictably with the application of unmodulated optical power.

OP+SFP+TRMM+10G MULTI MODE OPTICAL TRANSCEIVER**Transmitter**

Parameter	Minimum	Typical	Maximum	Unit	Notes
Laser OMA Output Power	-4.3			dBm	1
Laser Mean Output Power			-1.0	dBm	1
Laser Off Power			-30	dBm	1
Extinction Ratio	3.0			dB	1
Transmitter and Dispersion Penalty (TDP)			3.9	dB	1
Center Wavelength	840		860	nm	1
Optical Return Loss Tolerance			12	dB	1

RECEIVER

Parameter	Minimum	Typical	Maximum	Unit	Notes
Receiver Sensitivity (OMA)			-11.1	dBm	1
Stressed Receiver Sensitivity (OMA)			-7.5	dBm	1,2
Receiver Power Overload	-1.0			dBm	1
Receiver Reflectance			-12	dB	1
Center Wavelength	840		860	nm	1
Vertical Eye Closure Penalty	3.5			dB	3
Stressed Eye Jitter	0.3			UIp-p	3
RX_LOS (OMA) Assert			-12	dBm	4
RX_LOS (OMA) De-Assert	-30			dBm	4
RX_LOS (OMA) Hysteresis	0.5			dB	4

1. IEEE 802.3ae Clause 52 compliant
2. Measured with worst ER; BER<10⁻¹²; 231-1 PRBS
3. Vertical eye closure and stressed eye jitter are test conditions for stressed sensitivity (OMA) measurement.
4. Loss of Signal (LOS) detection responds only to OMA and the indicator will respond unpredictably with the application of unmodulated optical power.

POWER CONSUMPTION

Module Power Consumption	40 W maximum
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Ordering Information

MODULE

SEL-4UCIP1-EOS	Uncompressed over IP Encapsulation/De-encapsulation, includes 4 independent unidirectional HD/SD-SDI channels that can be assigned as either transmit or receive over 10GigE IP, includes Front module and Back module with 8x HD-BNC connectors for SDI signals and dual SFP+ cages support for 10GbE links, with MSDNO stream licenses (order SFP+ options separately).
SEL-8UCIP1-EOS	Uncompressed over IP Encapsulation/De-encapsulation, includes 8 independent unidirectional HD/SD-SDI channels that can be assigned as either transmit or receive over 10GigE IP, includes Front module and Back module with 8x HD-BNC connectors for SDI signals and dual SFP+ cages support for 10GbE links, with MSDNO stream licenses (order SFP+ options separately).
SEL-8UCIP1-A67-EOS	Uncompressed over IP Encapsulation/De-encapsulation, includes 8 unidirectional 3G/HD/SD-SDI channels assigned as 4x transmit and 4x receive over 10GbE IP and support for 16 mono AES67 per video channel, includes Front module and Back module with 8x HD-BNC connectors for SDI signals and dual SFP+ cages support for 10GbE links, with MSDNO stream licenses (order SFP+ options separately).

SOFTWARE UPGRADE OPTIONS

SELOPT-SK-8UCIP	Software key option for Uncompressed over IP module, expansion of SEL-4UCIP1-EOS from 4 to 8 independent unidirectional HD/SD-SDI channels that can be assigned as either transmit or receive over 10GigE IP (limited to 6 channels Transmit or Receive).
SELOPT-SK-8UC-A67	Software key option for Uncompressed over IP module, Apply only when the product is configured as 8 unidirectional channels with SEL-8UCIP1. Adds support for 3G video and 16 mono AES67 per video channel.

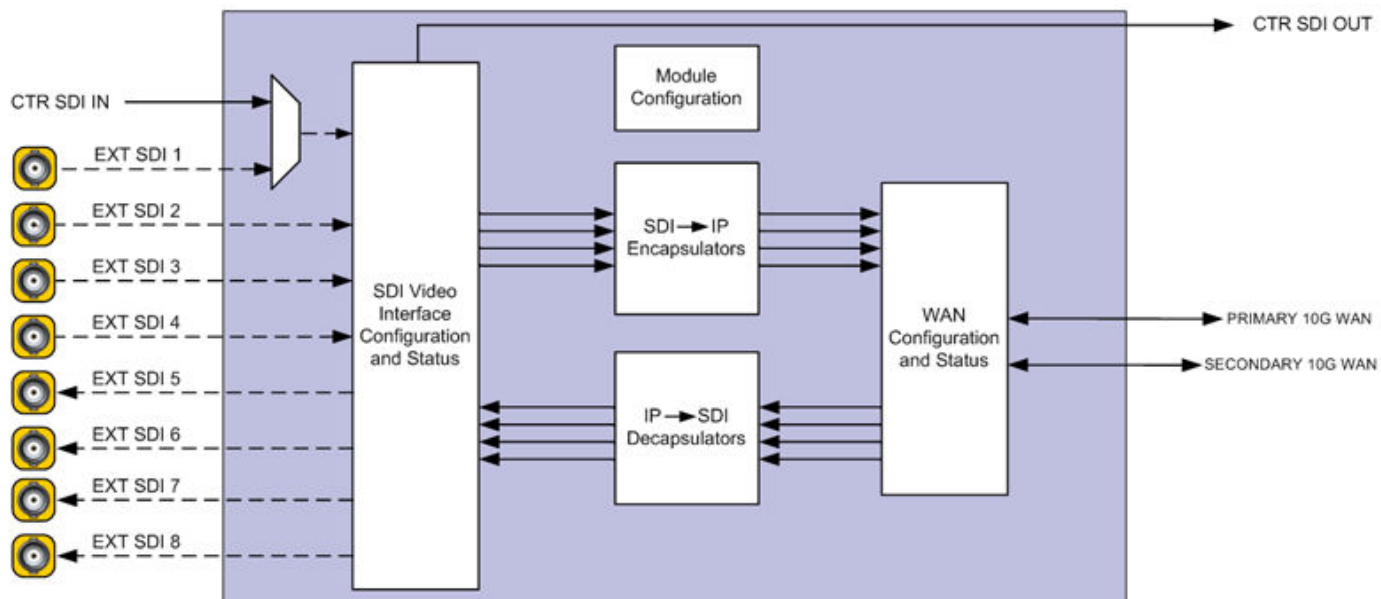
SMALL FORM-FACTOR PLUGGABLE

SEL+AOC+10G	10GbE Small Form Factor Pluggable SFP+ transceiver Direct Attach Active Optical Cable, designed for high speed, short range data link.
OP+SFP+TRSM+10G	SFP+ transceiver. 10-Gigabit Ethernet links up to 10km over Single Mode fiber.
OP+SFP+TRMM+10G	10BASE-SR Fiber Enhanced Small Form Factor Pluggable SFP+ transceiver. 10-Gigabit Ethernet links over multimode fiber. Maximum link length of 300m on 2000 MHz-km MMF.

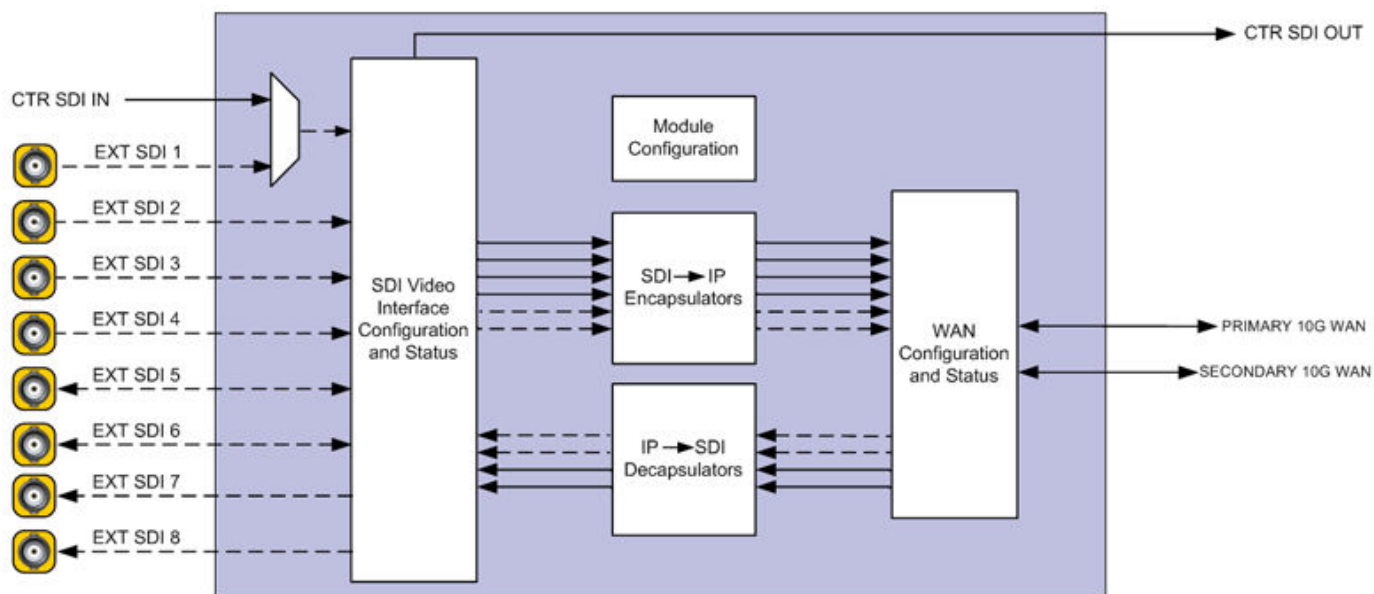
Selenio™ MCP3



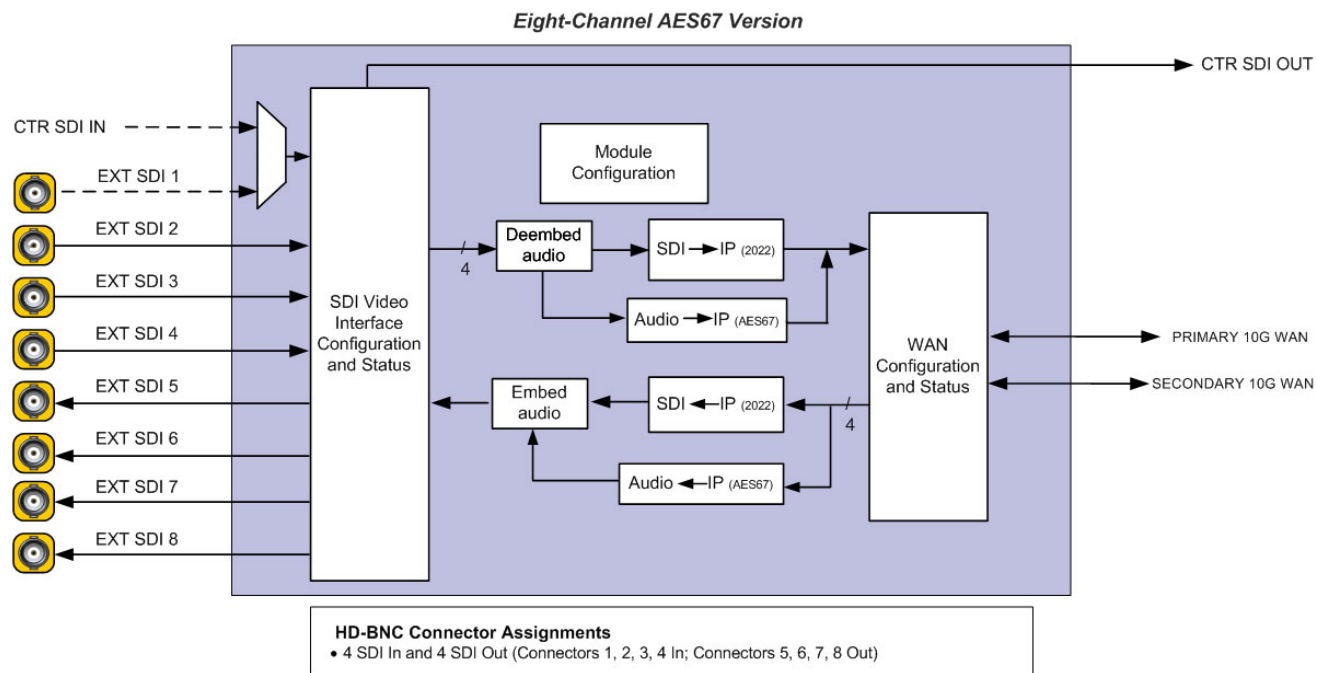
Four SDI → IP + Four IP → SDI Configuration



Six SDI → IP + Two IP → SDI Configuration



Four SDI --> IP + Four IP --> SDI (in AES67 Mode) Configuration



Back Module

